PROGRAM PERKULIAHAN FISIKA SEKOLAH MENGGUNAKAN *PROBLEM BASED LEARNING MANAGEMENT SYSTEM ACCESSED BY SMARTPHONE* (PBLMSAS) UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KREATIF DAN LITERASI DIGITAL CALON GURU FISIKA

DISERTASI

Diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Doktor Pendidikan IPA

oleh

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PROGRAM STUDI PENDIDIKAN ILMU PENGETAHUAN ALAM
SEKOLAH PASCASARJANA
UNIVERSITAS PENDIDIKAN INDONESIA
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PROGRAM PERKULIAHAN FISIKA SEKOLAH MENGGUNAKAN *PROBLEM BASED LEARNING MANAGEMENT SYSTEM ACCESSED BY SMARTPHONE* (PBLMSAS) UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KREATIF DAN LITERASI DIGITAL CALON GURU FISIKA

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PERNYATAAN

Dengan ini saya menyatakan bahwa disertasi yang berjudul **"Program Perkuliahan Fisika Sekolah Menggunakan *Problem Based Learning Management System Accessed by Smartphone* (PBLMSAS) untuk Meningkatkan Keterampilan Berpikir Kreatif dan Literasi Digital Calon Guru Fisika"** ini beserta seluruh isinya adalah benar-benar karya sendiri dan saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika keilmuan yang berlaku dalam masyarakat keilmuan. Atas pernyataan tersebut, saya siap menanggung risiko yang dijatuhkan kepada saya apabila kemudian ditemukan adanya pelanggaran terhadap etika keilmuan dalam karya ini, atau ada klaim dari pihak lain terhadap keaslian karya saya.

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UCAPAN TERIMA KASIH

Disertasi ini merupakan sebuah karya ilmiah yang disusun dengan penuh perjuangan. Disertasi ini tidak dapat dituntaskan dengan peran seorang diri, tetapi melibatkan peran serta, bantuan, dan dukungan bari pihak-pihak lain. Melalui secarik kertas ini, penulis ingin menyampaikan rasa terima kasih yang sedalam-dalamnya kepada

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PROGRAM PERKULIAHAN FISIKA SEKOLAH MENGGUNAKAN *PROBLEM BASED LEARNING MANAGEMENT SYSTEM ACCESSED BY SMARTPHONE* (PBLMSAS) UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KREATIF DAN LITERASI DIGITAL CALON GURU FISIKA

Abstrak

Penelitian ini bertujuan untuk mengembangkan program perkuliahan fisika sekolah menggunakan *Problem Based Learning Management System Accessed by Smartphone* (PBLMSAS) dalam meningkatkan kemampuan kognitif, keterampilan berpikir kreatif, dan literasi digital calon guru fisika. Penelitian ini dilakukan dengan menggunakan metode penelitian dan pengembangan (*Research and Development*) melalui model pengembangan ADDIE (*Analysis, Design, Development, Implementation,* dan *Evaluation*). Pada tahap analisis dilakukan studi literatur dan lapangan berkaitan dengan perkuliahan fisika sekolah dan kompetensi yang dibutuhkan guru fisika . Pada tahap desain dilakukan perancangan dan SAP, kisi-kisi tes kemampuan kognitif, keterampilan berpikir kreatif dan tes literasi digital, merancang aplikasi PBLMSAS, dan merancang lembar observasi keterlaksanaan perkuliahan. Pada tahap pengembangan dilakukan penyusunan semua perangkat perkuliahan, validasi ahli terhadap SAP dan instrumen, uji coba PBLMSAS dan instrumen, dan melakukan uji coba terbatas. Pada tahap implementasi dilaksanakan perkuliahan fisika sekolah menggunakan PBLMSAS kepada mahasiswa yang mengontrak fisika sekolah di salah satu LPTK pada tahun akademik 2020/2021. Pada tahap evaluasi dilakukan pengolahan data dan analisis data yang terkumpul pada tahap implementasi. Pengolahan data skor tes kemampuan kognitif, keterampilan berpikir kreatif, dan tes literasi digital dilakukan dengan menggunakan *N-Gain* dan analisis secara statistik. Sedangkan pengolahan data keterlaksanaan perkuliahan ditentukan dengan persentase. Hasil penelitian menunjukkan bahwa program perkuliahan fisika sekolah dengan menggunakan PBLMSAS memberikan peningkatan yang lebih tinggi terhadap kemampuan kognitif, keterampilan berpikir kreatif, dan literasi digital dibandingkan dengan perkuliahan fisika sekolah secara konvensional. Terdapat korelasi diantara kemampuan kognitif, keterampilan berpikir kreatif, dan literasi digital. Program perkuliahan fisika sekolah menggunakan PBLMSAS memiliki beberapa keunggulan diantaranya adalah fleksibilitas dalam perkuliahan, menciptakan pembelajaran yang interaktif dan menyenangkan, memotivasi mahasiswa untuk belajar secara aktif, dan melatihkan kemampuan kognitif, keterampilan berpikir kreatif, dan literasi digital.

SCHOOL PHYSICS LECTURE PROGRAM USING PROBLEM BASED LEARNING MANAGEMENT SYSTEM ACCESSED BY SMARTPHONE (PBLMSAS) TO ENHANCE CREATIVE THINKING SKILLS AND DIGITAL LITERACY OF PROSPECTIVE PHYSICS TEACHER

Abstract

This study aims to develop a physics school lecture program using the Problem Based Learning Management System Accessed by Smartphone (PBLMSAS) in improving cognitive abilities, creative thinking skills, and digital literacy of prospective physics teachers. This research was conducted using research and development methods through the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). In the analysis phase, literature and field studies related to physics lectures and competencies required by physics teachers are carried out. In the design stage, there are many activities including designing SAP; designing draft of cognitive abilities test, creative thinking skills test, and digital literacy tests; and designing PBLMSAS applications, and. At the development stage, learning tools were compiled, SAP, instruments, and PBLMSAS were validated and then students took a trial of PBLMSAS, instruments, and lecture program. At the implementation stage, lecture activities using PBLMSAS were implemented to the students who contracted school physics at one of the LPTK in Tasikmalaya at the 2020/2021 academic year. At the evaluation stage, data collected at the implementation stage were analyzed. The score of digital literacy test, cognitive abilities test, and creative thinking skills test was carried out using N-Gain and statistical analysis. Data of the form of implementation of learning was determined by the percentage. The results showed that the lecture program of physics schools using PBLMSAS improved cognitive abilities, creative thinking skills, and digital literacy higher than the conventional physics school lecture. There is a high correlation between cognitive ability, creative thinking skills, and digital literacy. The physics school using PBLMSAS has several advantages including training in lectures, creating interactive and fun learning, motivating students to study actively, and training cognitive abilities, creative thinking skills, and digital literacy.

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